

SPECIAL MASTER'S RECOMMENDED CONSTRUCTIONS
PATENT NO. 7,051,147

Term	Special Master's Recommended Construction
Device	No Construction Necessary.
Configuration	No Construction Necessary.
Access control(s)	"Controls which limit a device's access to a specific subset of storage devices or sections of a single storage device according to a map."
Allow access ...to the remote storage devices using native low level, block protocol.	"Permit or deny access using the NLLBP of the Virtual Local Storage without involving a translation from high level network protocols or file system protocols to a native low level block protocol request."
Initiator Device	"A device that issues requests for data or storage."
Native low level block protocol (NLLBP)	"A set of rules or standards that enable computers to exchange information and do not involve the overhead of high level protocols and file systems typically required by network servers."
Workstation	"A computer having input/output devices intended for use by humans."
Control Access	"To limit a device's access to a specific subset of storage devices or sections of a single storage device according to a map."

Special Master's Proposed Construction of Disputed Terms					
Actual Claims Language	Crossroads' Proposed Construction	Crossroads' Evidence	Defendants' Proposed Construction	Defendants' Evidence	Special Master's Construction
United States Patent No. 7,051,147					
Claim 1:					
A storage router for providing virtual local storage on remote storage devices to a device, comprising: a buffer providing memory work space for the storage router; a first Fibre Channel controller operable to connect to and interface with a first Fibre Channel transport medium;	Device: "Computing device that issues storage access requests."	Device: Intrinsic: Claim 1, ¹ Col. 9, ll. 27-30 ("devices" refers to the devices that make requests and are allowed access to storage devices). Col. 1, ll. 36-37; Col. 2, ll. 4-5; Col. 4, ll. 55-56; Col. 8, ll. 65-68 (the specification describes the devices that make requests to access the storage devices as "computing devices"). Col. 1, ll. 57-60 ("from the perspective of a workstation, or other computing device, seeking to access such server data, the access is much slower than access to data on a local storage device "). Claim 3, Col. 9, ll. 37-39	Device: Computer.	See '035 patent, claim 1. 2	No Construction Necessary.

¹ United States Patent No. 6,425,035 ("the '035 Patent") and United States Patent No. 7,051,147 ("the '147 Patent") share a common specification. To facilitate cross-referencing, unless noted otherwise, all Col:Line cites in the charts of proposed claim constructions are to the '035 Patent.

² For this and other claim terms common to both the '035 and '147 patents, the parties have not identified any evidentiary issues that are different between the two patents. Therefore, for the sake of brevity and clarity, Defendants avoid repetition of issues addressed in detail in the '035 chart.

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		<p>(principles of claim differentiation require "devices," as a group, must necessarily be broader than "workstations").</p> <p>Col. 6, ll. 31-41, 46-56 (the specification describes "servers" as a type of computing device that can make storage access requests).</p> <p>Abstract, Col. 1, ll. 21-24, ll. 36-37, ll. 53-56; Col. 2, ll. 4-6; Col. 3, ll. 3-6, 41-43; Col. 4, ll. 38-42, ll. 55-56 Col. 6, ll. 45-55; Col. 8, ll. 65-68 ("devices" is used broadly to refer to various computing devices such as workstations, input/output devices, "initiator" and "target" devices).</p> <p>April 6, 2005 Reply to Office Action at 8, 10, 12, 22, Fore Decl. ISO Crossroads' Post-Hr'g Cl. Const., Ex. E; July 22, 2005 Reply to Office Action at 7-15, 21-23, 27-29 32 33 35-37 39</p>		

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		<p>Fore Decl. ISO Crossroads' Post-Hr'g Cl. Const. Br., Ex. F ("Device" is used over ninety times in the reexamination prosecution history to refer to types of devices capable of making requests for storage).</p> <p>Extrinsic:</p> <p>April 28, 2011 2d Supp. Decl. of John Levy, Ph.D., ¶ 4 (one of ordinary skill would understand that in the embodiments at Col. 6, ll. 33-41; 46-56, it is the server that sends requests for storage access to the storage router using NLLBP).</p> <p><u>The McGraw-Hill Illustrated Dictionary of Personal Computers</u> 126 (4th ed. 1995), Fore Decl. ISO Crossroads' Cl. Const. Br., Ex. W (defining device as "a mechanical, electrical or electromechanical contrivance or appliance. Commonly used in reference to peripherals</p>			

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		Special Master's Report at 22, <i>Dot Hill</i> Litigation, Pl.'s Cl. Const. Hr'g Ex. P-15 (Court previously construed "storage router" as "a data transmitting device that allows users to integrate different servers or workstations into a storage network").		
a second Fibre Channel controller operable to connect to and interface with a second Fibre Channel transport medium; and a supervisor unit coupled to the first and second Fibre Channel controllers and the buffer, the supervisor unit operable: to maintain a configuration for remote storage devices connected to the second Fibre Channel transport medium that maps between the device and the remote storage devices and	<p>Configuration:</p> <p>"A modifiable setting of information."</p>	<p>Configuration:</p> <p>Intrinsic:</p> <p>Col. 2, ll. 19-23; Col. 5, ll. 53-54; Col. 6, ll. 58-64 (describing "configuration" as information used to control operation of the storage router and which is modifiable).</p> <p>'147 Patent: Col. 2, ll. 28-32; Col. 9, ll. 36-41 ("configuration" can also include mapping information and additional information such as information needed to "implement[]</p>	<p>Configuration:</p> <p>"Map"; otherwise indefinite.</p>	<p>Intrinsic Evidence</p> <p>'147 patent claims 1, 9, 10, 34, 35 ("a configuration [...] that maps")</p> <p>'147 patent claims 15, 22, 29 ("a configuration wherein the configuration includes [the][a] map")</p> <p>2:20-23³ ("The configuration maps...")</p> <p>4:13-16</p> <p>5:50-53</p>
				No Construction Necessary.

³ As in the claim construction briefs previously submitted to the Court, all specification citations are to the '035 patent unless otherwise noted.

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that implements access controls for storage space on the remote storage devices;		<p>access controls").</p> <p>Claim 15, Col. 11, ll. 23-28 (the limitation "operable to maintain a configuration wherein the configuration includes a map..." would be meaningless under Defendants' proposed construction).</p> <p>Extrinsic:</p> <p><i>Chaparral</i> Markman Order at 16, Fore Decl. ISO Crossroads' Cl. Const. Br., Ex. L (parties to earlier action agreed to construe "maintain a configuration" to mean "keeping a modifiable setting of information"); February 22, 2011 Decl. of John Levy, Ph.D., ¶46 (person of ordinary skill would understand "maintaining a configuration" to mean "keeping a modifiable set of information").</p>		
and a supervisor unit coupled to the first and second Fibre Channel controllers and the buffer, the supervisor unit operable:	<p>Access control(s):</p> <p>"Controls which limit a device's access to a specific subset of storage devices or sections of a</p>	<p>Access control(s):</p> <p>Intrinsic:</p> <p>Fig. 3, Col. 3, ll. 7-59, Col. 4, ll. 7-27, 33-35,</p>		<p>See '035 patent, claim 1.</p> <p>"Controls which limit a device's access to a specific subset of storage devices or sections of a single storage device according to a map."</p>

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to maintain a configuration for remote storage devices connected to the second Fibre Channel transport medium that maps between the device and the remote storage devices and that implements access controls for storage space on the remote storage devices;	single storage device according to a map."	<p>40-43, 48-50, 50-53 (Fig. 3 shows embodiment in which all workstations can access global storage device).</p> <p>Col. 4, ll. 7-11 ("access controls" applies to shared storage).</p> <p>July 22, 2005 Reply to Office Action at 13-14, Fore Decl. ISO Crossroads' Post-Hr'g Cl. Const. Br., Ex. F (discussion during reexamination, that the "access controls" feature includes the concept of allowing multiple devices to have access to shared storage).</p> <p>Extrinsic:</p> <p><i>Chaparral</i> Markman Order at 3-7, 15, Fore Decl. ISO Crossroads' Cl. Const. Br., Ex. L (Crossroads' construction parallels historic construction; the invention contemplates using access controls for an entire storage device as well as shared storage. Court has</p>		

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		<p>rejected a construction in which a particular subset of storage could only be accessed by a single workstation).</p> <p>Comments on Statement of Reasons for Patentability and/or Confirmation, Fore Decl. ISO Pl.'s Cl. Const. Br., Ex. I (patentees expressly disagreed with any characterization of the claims that were "inconsistent with the claim language, specification or prior prosecution history.").</p>			
and to process data in the buffer to interface between the first Fibre Channel controller and the second Fibre Channel controller to allow access from Fibre Channel initiator devices to the remote storage devices using native low level, block protocol in accordance with the configuration.	<p>Allow access . . . to the remote storage devices using native low level, block protocol:</p> <p>"Permit or deny reading or writing of data using the NLLBP of the Virtual Local Storage without involving a translation from a high level file system command to a native low level, block protocol request."</p>	<p>Allow access . . . to the remote storage devices using native low level, block protocol:</p> <p>Intrinsic:</p> <p>Fig. 1, Col. 1, ll. 49-54; Col. 3, ll. 17-23 (the "storage router" of the invention is contrasted with a "network server" that allowed access to storage devices by translating high level file system commands of the</p>	<p>Allow access...to the remote storage devices using native low level, block protocol:</p> <p>Permit reading and writing of data in the native low level, block protocol of the storage device, without involving network servers, Ethernet networks, higher-level protocols such as TCP/IP, Ethernet protocols, network</p>	<p><i>See '035 patent, claim 1.</i></p>	<p>"Permit or deny access using the NLLBP of the Virtual Local Storage without involving a translation from high level network protocols or file system protocols to a native low level block protocol request."</p>

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		<p>"network protocol" into low level requests (i.e., NLLBP) and sending the NLLBP to the physical storage devices).</p> <p>Claim 1, Col. 9, ll. 13-30 (storage router "allow[s] access from <u>devices</u> connected to the first transport medium to the storage devices using native low level, block protocols" (emphasis added); the storage router, specifically, the supervisor unit within the storage router, "uses" the NLLBP to permit or enable access).</p> <p>Col. 4, ll. 7-47 (invention of patents-in-suit provides "virtual local storage" that appears to a workstation as local storage, and appears to have the same characteristics of local storage).</p> <p>Col. 4, ll. 44-57 ("virtual local storage" is "provided" by the storage router in a manner that is transparent to the</p>	<p>protocols or file system protocols, or translation from one protocol to another.</p>		

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		<p>to data on a local storage device").</p> <p>Claim 3, Col. 9, ll. 37-39 (principles of claim differentiation require "devices," as a group, must necessarily be broader than "workstations").</p> <p>Col. 3, ll. 17-23 (the "network protocol" used by the prior art "network servers" to allow access to storage devices is a protocol that includes a high level file system command that must be translated into low level storage requests).</p> <p>April 6, 2005 Reply to Office Action at 10-11, Fore Decl. ISO</p> <p>Crossroads' Post-Hr'g Cl. Const. Br., Ex. E; July 22, 2005 Reply to Office Action at 24-27, Fore Decl. ISO</p> <p>Crossroads' Post-Hr'g Cl. Const. Br., Ex. F (Crossroads distinguished Petal, Spring and Oeda as having a server that provided controlled</p>		

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		<p>access to storage was required to translate high level file system commands into low level commands in order to send the NLLBP to the storage devices).</p> <p>April 6, 2005 Reply to Office Action at 8-11, 19, 22-23, Fore Decl. ISO Crossroads' Post-Hr'g Cl. Const. Br., Ex. E; July 22, 2005 Reply to Office Action at 11-17, 21-28, Fore Decl. ISO Crossroads' Post-Hr'g Cl. Const. Br., Ex. F (showing that Crossroads did not make a sweeping disclaimer of <i>any</i> use of a "network server"; Crossroads distinguished its invention from Oeda, Petal and Spring based on the requirement that the "network server" that provided controlled access to storage was required to translate the high level file system command into low level commands in order to send the NLLBP to the storage device, not the use of Ethernet</p>		

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		<p>networks, Ethernet or TCP/IP).</p> <p>Col. 2, ll. 17-20; Col. 5, ll. 19-22, 50-57, 60-63; Col. 6, ll. 32-37; '147 Patent, Claim 1, Col. 9, ll. 28-32 (disclosing and claiming embodiments using Fibre Channel; the inclusion of "without involving . . . network protocols" according to Defendants' expert would prohibit the use of Fibre Channel despite the fact that these are express embodiments).</p> <p>Col. 5, ll. 53-56 (Fibre Channel is a protocol used for communications over "Fibre Channel based networks").</p> <p>Extrinsic:</p> <p>March 7, 2011 Supp. Decl. of John Levy, Ph.D., ¶¶ 9-13 (data transfer in networks best understood as having layers; when TCP/IP and Ethernet protocols were used by prior art systems to transport high level network file system</p>		

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		<p>requests, a network server would translate such requests into low level requests to access storage); ¶¶6-7 (prior art "server" described in patents-in-suit was specifically a device that allowed access between the device requesting "access to data" and the storage devices using something called a "network protocol"; such "servers" implemented file systems and received high level file system protocols from devices requesting data access).</p> <p>April 28, 2011 2d Supp. Decl. of John Levy, Ph.D., ¶14 (person of ordinary skill would understand that the specification discloses a server that sends requests for storage access to a storage router using NLLBP).</p> <p>May 11, 2011 3d Supp. Decl. of John Levy, Ph.D., ¶13 (a "network server" is a server that can request access to storage).</p>		

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		<p>Microsoft Computer Dictionary 430 (3d Ed. 1997), May 11, 2011 3d Supp. Decl. of John Levy, Ph.D., Ex. A (defining “server” as “(1) on a local area network (LAN), a computer running administrative software that controls access to the network and its resources, such as printers and disk drives, and provides resources to computers functioning as workstations on the network”).</p> <p>Special Master’s Report at 22, <i>Dot Hill</i> Litigation, Pl.’s Cl. Const. Hr’g Ex. P-15 (Court previously construed “storage router” as “a data transmitting device that allows users to integrate different servers or workstations into a storage network”).</p> <p>Hr’g Tr. 76:4-10, 82:20-23, March 8, 2011 (in hypothetical network of Graphic 2 of Defendants’</p>			

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		<p>Markman</p> <p>Demonstratives (Fore Decl. ISO Pl.'s Post-Hr'g Cl. Const. Br., Ex. J) the workstation sends high level file systems commands to network server); <i>Id.</i> at 200:2-5, 201:22-24, 202:24-203:3 (Defendants expressly stated that a "device" is a "computer" that is both "reading or writing data from a storage device" and sending NLLBPs and the only "device" that does so in Graphic 2, shown in Crossroads' Post-Hearing Brief is the "network server").</p> <p>Crossroads' Concise Statement of Infringement, <i>Dot Hill</i> Litigation (Case No. A-03-CV-754 SS), Fore Decl. ISO Pl.'s Post-Hr'g Cl. Const. Br., Ex. H; April 28, 2011 2d Supp. Decl. of John Levy, Ph.D., ¶5 (accused devices in <i>Dot Hill</i> litigation were designed to be used in hypothetical system shown in Graphic 2 of Defendants' Markman</p>		

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		<p>Demonstratives (Fore Decl. ISO Pl's Post-Hr'g Cl. Const. Br., Ex. J)).</p> <p>Hr'g Tr. at 81:12-15, March 8, 2011 (all parties agree that the Petal, Spring and Oeda references disclose systems with a "server" interposed between workstations and storage devices); <i>Id.</i> at 88:2-89:16; 93:4-7; 100:16-24 (Defendants agree that the "translation" distinguished by patentees during reexamination was from high level file system commands into NLLBP requests); <i>Id.</i> at 89:11-16 (parties agree that "allowing access . . . using NLLBP" occurs without a translation from a high level file system command to a NLLBP request); <i>Id.</i> at 91:14-16, 92:1-5, 152:4-7 (Defendants concede that the "network protocols" described in the Oeda, Petal and Spring references included file system</p>		

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		<p>commands thus, including "without involving . . . network protocols" is superfluous to "without involving a translation from a high level file system command to a native low level block protocol request.")</p> <p>April 28, 2011 2d Supp. Decl. of John Levy, Ph.D., ¶7 (CIFS, NFS and FTP are network protocols).</p> <p>March 7, 2011 Decl. of Brian Berg, ¶37 (Defendants' expert uses term "network protocol" broadly such that it would include Fibre Channel).</p> <p>April 28, 2011 2d Supp. Decl. of John Levy, Ph.D., ¶3 (a workstation gets "access to the local storage device through native low level block protocols").</p> <p>Hr'g Tr. at 129:7-13, March 8, 2011 (Defendants agreed to remove "without</p>		

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		<p>involving . . . Ethernet networks, Ethernet protocols, TCP/IP" from their proposed construction). March 7, 2011 Supp. Decl. of John Levy, Ph.D., ¶13 (Ethernet and TCP/IP protocols are concerned only with delivery of messages).</p> <p>February 22, 2011 Decl. of John Levy, Ph.D., ¶36 (NLLBP "used" by the storage router to allow access is the NLLBP sent to it from the device; this NLLBP is the NLLBP appropriate for the virtual local storage, not the NLLBP of the storage device storing the data).</p> <p><u>Dictionary of Computer and Internet Terms</u> 311 (6th Ed. 1996), Fore Decl. ISO Pl.'s Cl. Const. Br., Ex. S (defining "native" as "1. designed for a specific hardware or software environment (rather than for compatibility with something else)").</p>		